SAF-RC-189 100N Field Remediation – Soil Full Protocol FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0785 SAF-RC-189

Sample Location: 100-N-99

Date:

27 May 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100N Field Remediation - Soil Full Protocol - Waste Site 100-N-99

Subject:

PAH - Data Package No. JP0785-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0785 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

| Sample ID | Sample Date | Media | Validation | Analyte |
|-----------|-------------|-------|------------|------------|
| J1TL55 | 5/1/14 | Soil | С | See note 1 |
| J1TL56 | 5/1/14 | Soil | С | See note 1 |
| J1TL57 | 5/1/14 | Soil | С | See note 1 |
| J1TL58 | 5/1/14 | Soil | С | See note 1 |
| J1TL59 | 5/1/14 | Soil | С | See note 1 |
| J1TL60 | 5/1/14 | Soil | С | See note 1 |
| J1TL61 | 5/1/14 | Soil | С | See note 1 |
| J1TL62 | 5/1/14 | Soil | С | See note 1 |
| J1TL63 | 5/1/14 | Soil | С | See note 1 |
| J1TL64 | 5/1/14 | Soil | С | See note 1 |

^{1 -} Polyaromatic hydrocarbons by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

One field blank (J1TL64) was submitted for analysis. No analytes were detected in the field blank.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to RPDs outside QC limits, all (except JTL63) PAH results (except benzo(a)pyrene) were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TL60/J1TL63) were submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0785 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

 Due to RPDs outside QC limits, all (except JTL63) PAH results (except benzo(a)pyrene) were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation*. Services, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites, U.S. Department of Energy, October 2006.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- U Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

INORGANICS DATA QUALIFICATION SUMMARY*

| SDG: JP0785 | REVIEWER: ELR | Project: 100-N-99 | PAGE_1_OF_1 |
|-----------------------------|------------------|----------------------|-------------|
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| All (except benzo(a)pyrene) | J | All (except J1TL63) | RPD |

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL55

Lab Sample ID:

280-54971-1

Client Matrix:

Solid

% Moisture:

0.7

Date Sampled: 05/01/2014 0833

Date Received: 05/02/2014 0940

| 8310 PAHs | (HPLC) |
|-----------|--------|
|-----------|--------|

Analysis Method: Prep Method:

Client: Washington Closure Hanford

8310 3550C Analysis Batch: Prep Batch:

280-224587 280-224050 Instrument ID:

CHHPLC_G 30.3 g Initial Weight/Volume: Final Weight/Volume: 4 mL

20 uL

| Dilution: Analysis Date: Prep Date: | 1.0 05/07/2014 1748 05/02/2014 1755 | V4/8/19 | Inject | Weight/Volume: tion Volume: ilt Type: | 4 mL 20 uL PRIMARY |
|---|--|----------------|------------------------------------|---|--------------------------|
| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
| Acenaphthene | resident of the property of the second of th | 10 | UNU | 10 | 100 |
| Acenaphthylene | | 9.0 | UN ${\mathcal J}$ | 9.0 | 100 |
| Anthracene | | 3.0 | UNŤ | 3.0 | 20 |
| Benzo[a]anthracer | 1 0 | 3.2 | UN 🝎 | 3.2 | 15 |
| | | 6.4 | u N | 6.4 | 15 |
| Benzo[a]pyrene | 200 | 4.2 | UN T | 4.2 | 15 |
| Benzo[b]fluoranthe | | 7.2 | UNI | 7.2 | 30 |
| Benzo[g,h,i]peryle | | 3.9 | l N D | 3.9 | 15 |
| Benzo[k]fluoranthe | ane . | 4.8 | UN | 4.8 | 40 |
| Chrysene | | 11 | UN | 11 | 30 |
| Dibenzo(a,h)anthr | acene | 13 | UN | 13 | 40 |
| Fluoranthene | | 5.3 | UN | 5.3 | 30 |
| Fluorene | | 12 | UN | 12 | 30 |
| Indeno[1,2,3-cd]p | yrene | | UN | 12 | 100 |
| Naphthalene | | 12 | UN . | 12 | 40 |
| Phenanthrene | | 12 | 117 | 12 | 40 |
| Pyrene | | 12 | UN 🍑 | 12 | 40 |
| Surrogate | | %Rec | Qualifier | | ance Limits |
| Terphenyl-d14 (S | UR) | 81 | y coops taken a military service . | 72 - 11: | 5 |

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL56

Lab Sample ID:

280-54971-2

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 05/01/2014 0835

Date Received: 05/02/2014 0940

| | | 8310 PAHs (H | PLC) | | |
|---|--|----------------|--|---|--|
| Analysis Method: Prep Method: Dilution: Analysis Date: Prep Date: | 8310 3550C 1.0 05/07/2014 1920 05/02/2014 1755 | | 224050 | Instrument ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: Result Type: | CHHPLC_G 30.0 g 4 mL 20 uL PRIMARY |
| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifie | r MDL | RL |
| Acenaphthene | and the second s | 10 | U.J | 10 | 100 |
| Acenaphthylene | | 9.1 | u 3 | 9.1 | 100 |
| Anthracene | | 3.1 | υ ີ 5. | 3.1 | 20 |
| Benzo[a]anthracen | e | 3.2 | υ 5 | 3.2 | 15 |
| Benzo[a]pyrene | • | 6.5 | U | 6.5 | 15 |
| Benzo[b]fluoranthe | ne | 4.3 | υゴ | 4.3 | 15 |
| Benzo[g,h,i]perylen | | 7.3 | υŢ | 7.3 | 30 |
| Benzo[k]fluoranthe | | 4.0 | · U [| 4.0 | 15 |
| Chrysene | | 4.9 | U | 4.9 | 41 |
| Dibenzo(a,h)anthra | rene | 11 | υl | 11 | 30 |
| Fluoranthene | | 13 | U Ì | 13 | 41 |
| Fluorene | | 5.4 | υÌ | 5.4 | 30 |
| Indeno[1,2,3-cd]py | rene | 12 | U] | 12 | 30 |
| Naphthalene | | 12 | υ | 12 | 100 |
| Phenanthrene | | 12 | U | 12 | 41 |
| Pyrene | | 12 | U Y | 12 | 41 |
| Surrogate | | %Rec | Qualifie | er Accepta | ance Limits |
| Terphenyl-d14 (SU | IR) | 81 | ping - meglenggin (g., m.g. (s), ma, san sammang ta nggintang final (final membanas) (fi | 72 - 118 | 5 |

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL57

Lab Sample ID:

280-54971-3

Client Matrix:

Solid

% Moisture:

3.2

Date Sampled: 05/01/2014 0838 Date Received: 05/02/2014 0940

| | | 8310 P | AHs (HPLC) | | |
|---|---|--------------------------------|-------------------------------------|---|-------------------------------------|
| Analysis Method: Prep Method: Dilution: Analysis Date: | 8310 3550C 1.0 05/07/2014 1950 | Analysis Batch: Prep Batch: | 280-224587 280-224050 | Instrument ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: | CHHPLC_G 31.6 g 4 mL 20 uL |
| Prep Date: | 05/02/2014 1755 | V | 181 | Result Type: | PRIMARY |
| Analyte | DryWt Corrected: Y | Result (u | g/Kg) Qua | difier MDL | RL |
| Acenaphthene | Control of the second section of the section of the second section of the section of the second section of the second section of the | 9.8 | υ"J | 9.8 | 98 |
| Acenaphthylene | | 8.8 | U . | T 8.8 | 98 |
| Anthracene | | 3.0 | U . | ý 3.0 | 20 |
| Benzo[a]anthracene | 3 | 3.1 | u-đ | 5 3.1 | 15 |
| Benzo[a]pyrene | | 6.3 | U " | 6.3 | 15 ု |
| Benzo[b]fluoranther | ne | 4.1 | U | 4.1 ' | 15 |
| Benzo[g,h,i]perylen | | 7.1 | υ [™] | 7.1 | 29 |
| Benzo[k]fluoranther | | 3.9 | U | 3.9 | 15 |
| Chrysene | | 4.7 | U | 4.7 | 39 |
| Dibenzo(a,h)anthra | cene | 11 | U | 11 | 29 |
| Fluoranthene | | · 13 | U | 13 | 39 |
| Fluorene | | 5.2 | U | 5.2 | 29 |
| indeno[1,2,3-cd]pyr | rene | 12 | U | 12 | 29 |
| Naphthalene | | 12 | U | 12 | 98 |
| Phenanthrene | | 12 | U, | 12 | 39 |
| Pyrene | | 12 | υ (| 12 | 39 |
| Surrogate | | %Rec | Qua | alifier Accept | ance Limits |
| Terphenyl-d14 (SU | R) | 76 | AND THE PROPERTY OF THE PROPERTY OF | 72 - 11 | 5 |

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL58

Lab Sample ID:

280-54971-4

Client Matrix:

Solid

% Moisture:

1.2

Date Sampled: 05/01/2014 0840

Date Received: 05/02/2014:0940

| | | 8310 P | AHs (HPLC) | | | |
|---------------------|--|-----------------|---|------------------------|---|--|
| Analysis Method: | 8310 | Analysis Batch: | 280-224587 | Instrument ID: | CHHPLC_G | |
| Prep Method: | 3550C | Prep Batch: | 280-224050 | Initial Weight/Volume: | 31.1 g | |
| Dilution: | 1.0 | | | Final Weight/Volume: | 4 mL | |
| Analysis Date: | 05/07/2014 2021 | ا سسا | ال ال | Injection Volume: | 20 uL | |
| Prep Date: | 05/02/2014 1755 | Tul | 8117 | Result Type: | PRIMARY | |
| ricp Date. | 00/02/2014 1/30 | , ,, | • • | riodait Typo. | , | |
| Analyte | DryWt Corrected: Y | Result (u | g/Kg) Quali | fier MDL | RL | |
| Acenaphthene | The Control of the Co | 9.8 | U 5 | 9.8 | 98 | |
| Acenaphthylene | | 8.8 | υ Σ | 8.8 | 98 | |
| Anthracene | | 3.0 | U 5 | 3.0 | 20 | |
| Benzo[a]anthracene | e | 3.1 | u 5 | 3.1 | 15 | |
| Benzo[a]pyrene | | 6.3 | U | 6.3 | 15 | |
| Benzo[b]fluoranthe | ne | 4.1 | ∪ ∑ | 4.1 | 15 | |
| Benzo[g,h,i]perylen | | 7.0 | U | 7.0 | 29 | |
| Benzo[k]fluoranther | | 3.8 | u \ | 3.8 | 15 | |
| Chrysene | | 4.7 | U | 4.7 | 39 | |
| Dibenzo(a,h)anthra | icene | 11 | U | 11 | 29 | |
| Fluoranthene | | 13 | U | 13 | 39 | |
| Fluorene | | 5.2 | U. | 5.2 | 29 | |
| ndeno[1,2,3-cd]pyr | rene | 12 | U | 12 | 29 | |
| Naphthalene | | 12 | U | 12 | 98 | |
| Phenanthrene | | 12 | U | 12 | 39 | |
| Pyrene | | 12 | u. C | 12 | 39 | |
| Surrogate | | %Rec | Quali | fier 'Accept | ance Limits | |
| Terphenyl-d14 (SU | R) | 77 | anakin reservit irin etsaklikula de v. v seeke koleseeli. 15. Alexandri | 72 - 11 | 5 | |

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL59

Client: Washington Closure Hanford

Lab Sample ID:

Analysis Method:

Prep Method:

280-54971-5

Client Matrix:

Solid

8310

3550C

% Moisture:

Analysis Batch:

Prep Batch:

1.0

280-224587

280-224050

Date Sampled: 05/01/2014 0830 Date Received: 05/02/2014 0940

8310 PAHs (HPLC)

CHHPLC_G Instrument ID: Initial Weight/Volume: 30.7 g Final Weight/Volume: 4 mL

| | 05/07/2014 2052 05/02/2014 1755 | Vu[8] | (- (| njection Volume: Result Type: | 20 ul. PRIMARY |
|-------------------------------------|--|----------------|------------|----------------------------------|-------------------|
| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
| Acenaphthene | a commence with the commence of the commence o | 9.9 | UJ | 9.9 | 99 |
| Acenaphthylene | | 8.9 | ս ፲ | 8.9 | 99 |
| Anthracene | | 3.0 | υĮ | 3.0 | 20 |
| Benzo[a]anthracene | | 3.1 | u) | 3.1 | 15 |
| • • | | 6.3 | U | 6.3 | 15 |
| Benzo[a]pyrene Benzo[b]fluoranthene | | 4.1 | υŢ | 4.1 | 15 |
| | | 7.1 | υ Υ | 7.1 | 30 |
| Benzo[g,h,i]perylene | | 3.9 | U \ | 3.9 | 15 |
| Benzo[k]fluoranthene | | 4.8 | U | 4.8 | 39 |
| Chrysene | , no | 11 | U | 11 | 30 |
| Dibenzo(a,h)anthrace | ne | 13 | Ū | 13 | 39 |
| Fluoranthene | | 5.2 | Ū | 5.2 | 30 |
| Fluorene | | 12 | ŭ l | 12 | 30 |
| indeno[1,2,3-cd]pyrer | ie . | 12 | ŭ | 12 | 99 |
| Naphthalene | | 12 | Ŭ. | 12 | 39 |
| Phenanthrene Pyrene | | 12 | ŭΨ | 12 | 39 |
| Surrogate | | %Rec | Qualifier | | ance Limits |
| Terphenyl-d14 (SUR) | e in a grand and the second and a second and a second and a second and a second a se | 80 | | 72 - 11 | Ö |

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL60

Lab Sample ID:

280-54971-6

Client Matrix:

Solid

% Moisture:

1.0

Date Sampled: 05/01/2014 0822 Date Received: 05/02/2014 0940

| | | 8310 P | AHs (HPLC) | | | | |
|----------------------|--|-----------------|--------------------------------------|-----------------------------|------------------------|----------------------------------|--|
| Analysis Method: | 8310 | Analysis Batch: | 280-224587 | | Instrument ID: | CHHPLC_G | |
| Prep Method: | 3550C | Prep Batch: | 280-224050 | | Initial Weight/Volume: | 31.0 g | |
| Dilution: | 1.0 | / | 11.6 | | Final Weight/Volume: | 4 mL | |
| Analysis Date: | 05/07/2014 2153 | | 1814 | | Injection Volume: | 20 uL | |
| Prep Date: | 05/02/2014 1755 | V | ~ (• · | | Result Type: | PRIMARY | |
| Analyte | DryWt Corrected: Y | Result (u | g/Kg) | Qualifie | r MDL | RL | |
| Acenaphthene | S 200 S TORRESON MARKET OF STREET STREET STREET STREET | 9.8 | e mana Managanary is a m | U 🕽 | 9.8 | 98 | |
| Acenaphthylene | | 8.8 | | υΣ | 8.8 | 98 | |
| Anthracene | | 3.0 | | U) | 3.0 | 20 | |
| Benzo[a]anthracene | • | 3.1 | | Uブ | 3.1 | 15 | |
| Benzo[a]pyrene | | 6.3 | | U _ | 6.3 | 15 | |
| Benzo[b]fluoranther | ne | 4.1 | | UJ | 4.1 | 15 | |
| Benzo[g,h,i]perylene | e | 7.0 | | U | 7.0 | 29 | |
| Benzo[k]fluoranther | ne | 3.9 | | U \ | 3.9 | 15 | |
| Chrysene | | 4.7 | | U | 4.7 | 39 | |
| Dibenzo(a,h)anthra | cene | 11 | | U | 11 | 29 | |
| Fluoranthene | | 13 | | U | 13 | 39 | |
| Fluorene | | 5.2 | | U | 5.2 | 29 | |
| Indeno[1,2,3-cd]pyr | ene | 12 | | U | 12 | 29 | |
| Naphthalene | | 12 | | U | 12 | 98 | |
| Phenanthrene | | 12 | | U., | 12 | 39 | |
| Pyrene | | 12 | | U Y | 12 . | 39 | |
| Surrogate | | %Rec | | Qualifie | r Accepta | nce Limits | |
| Terphenyl-d14 (SUI | R) | 81 | approximation - 1011 - respectively. | on the same of the contract | 72 - 115 | C . all cause of Tablesian Plant | |

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL61

Lab Sample ID:

280-54971-7

Client Matrix:

Solid

% Moisture:

1.0

Date Sampled: 05/01/2014/0826

Date Received: 05/02/2014 0940

| | • | 8310 P | AHs (HPLC) | | | | |
|---|--|--------------------------------|--|--|---|--|---|
| Analysis Method: Prep Method: Dilution: Analysis Date: Prep Date: | 8310 3550C 1.0 05/07/2014 2223 05/02/2014 1755 | Analysis Batch: Prep Batch: | 280-224587 280-224050 [| | Instrument ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: Result Type: | CHHPLC_G 30.8 g 4 mL 20 uL PRIMARY | |
| Analyte | DryWt Corrected: Y | Result (u | g/Kg) | Qualifie | r MDL | RL | |
| cenaphthene | and the second s | 9.8 | Manager 1, 1977 | U.T. | 9.8 | 98 | |
| cenaphthylene | | 8.9 | | υŒ | 8.9 | 98 . | |
| Anthracene | | 3.0 | | U j | 3.0 | 20 | |
| senzo[a]anthracene | • | 3.1 | | u) | 3.1 | 15 | |
| Benzo[a]pyrene | | 6.3 | | U | 6.3 | 15 | |
| enzo[b]fluoranther | ne | 4.1 | | u J | 4.1 | 15 | |
| Benzo[g,h,i]perylen | | 7.1 | | υĬ | 7.1 | 30 | |
| enzo[k]fluoranther | | 3.9 | | U | 3.9 | 15 | |
| Chrysene | | 4.8 | | U \ | 4.8 | 39 | |
| Dibenzo(a,h)anthra | cene | 11 | | U | 11 | 30 | |
| luoranthene | | 13 | | U | 13 | 39 | |
| luorene | | 5.2 | | υ | 5.2 | 30 | |
| ndeno[1,2,3-cd]pyr | rene | 12 | | U | 12 | 30 | |
| Vaphthalene | | 12 | | U | 12 | 98 | |
| henanthrene | | 12 | | U | 12 | 39 | |
| Pyrene | | 12 | | u W | 12 | 39 | |
| Surrogate | , | %Rec | | Qualifie | r Accepta | nce Limits | 1 |
| Terphenyl-d14 (SU | R) | 80 | existence is different than that countries the first Co. | agus in a ta ta completa de la comp | 72 - 115 | por water and a contract the desire | |

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL62

Lab Sample ID:

280-54971-8

Client Matrix:

Solid

% Moisture:

1.1

Date Sampled: 05/01/2014/0828

Date Received: 05/02/2014 0940

| | | 8310 P | AHs (HPLC) | | | |
|---------------------|--|-----------------|------------------------------------|------------------------|-------------|-----------------|
| Analysis Method: | 8310 | Analysis Batch: | 280-224587 | Instrument ID: | CHHPLC_G | |
| Prep Method: | 3550C | Prep Batch: | 280-224050 | Initial Weight/Volume: | 30.2 g | |
| Dilution: | 1.0 | | 1 | Final Weight/Volume: | 4 mL | |
| Analysis Date: | 05/07/2014 2254 | ا ، سدا | المالم | Injection Volume: | 20 uL | |
| Prep Date: | 05/02/2014 1755 | 1 L | 414 | Result Type: | PRIMARY | |
| Analyte | DryWt Corrected: \ | Result (u | g/Kg) Qua | alifier MDL | RL | F |
| cenaphthene | The second secon | 10 | Ü | 10 | 100 | |
| cenaphthylene | | 9.0 | v | 9.0 | 100 | |
| inthracene | | 3.1 | . U | 3.1 | 20 | |
| enzo[a]anthracene | e ' | 3.2 | U . | 3.2 | 15 | |
| enzo[a]pyrene | | 6.4 | U | 6. 4 ° | 15 | |
| enzo[b]fluoranther | ne | 4.2 | u S | 4.2 | 15 | |
| Benzo[g,h,i]perylen | e | 7.2 | U | 7.2 | 30 | |
| enzo[k]fluoranther | ne | 4.0 | U | 4.0 | 15 | |
| Chrysene | | 4.9 | U - | 4.9 | 40 | |
| ibenzo(a,h)anthra | cene | 11 | U | 11 | 30 | |
| luoranthene | | 13 | U | 13 | 40 | |
| luorene | | 5.3 | U | 5.3 | 30 | |
| ndeno[1,2,3-cd]pyr | ene | 12 | U- | 12 | 30 | |
| laphthalene | | 12 | U | 12 | 100 | |
| Phenanthrene | | 12 | U, | 12 | 40 | |
| Pyrene | | 12 | U | 12 | 40 | |
| Surrogate | | %Rec | Qui | alifier Accept | ance Limits | |
| Terphenyl-d14 (SUI | R) | 80 | political III II II I Managements. | 72 - 11 | 5 | . P #44 - No. 9 |

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL63

Lab Sample ID:

280-54971-9

Client Matrix:

05/12/2014 1434

Solid

% Moisture:

0.9

Date Sampled: 05/01/2014 0822

Date Received: 05/02/2014/0940

| 8310 PAHs (HPLC) | B310 | PAHS | (HPLC) |
|------------------|-------------|------|--------|
|------------------|-------------|------|--------|

Analysis Method: Prep Method:

8310 3550C Analysis Batch: Prep Batch:

280-225681 280-225338 Instrument ID: Initial Weight/Volume: CHHPLC_G 30.2 g 4 mL

Dilution: Analysis Date:

Prep Date:

1.0 05/14/2014 1211

Final Weight/Volume: Injection Volume: Result Type:

20 uL PRIMARY

| knalyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|------------------------|--|----------------|-----------|-----|-----|
| cenaphthene | granical and the state of the s | 10 | U | 10 | 100 |
| cenaphthylene | | 9.0 | U | 9.0 | 100 |
| Inthracene | | 3.1 | UN | 3.1 | 20 |
| Benzo[a]anthracene | | 3.2 | U | 3.2 | 15 |
| Benzo[a]pyrene | | 6.4 | U | 6.4 | 15 |
| Benzo[b]fluoranthene | | 4.2 | UN | 4.2 | 15 |
| Benzo[g,h,i]perylene | | 7.2 | U | 7.2 | 30 |
| Benzo[k]fluoranthene | | 4.0 | UN | 4.0 | 15 |
| Chrysene | | 4.9 | U | 4.9 | 40 |
| Dibenzo(a,h)anthracene | | 11 | UN | 11 | 30 |
| Fluoranthene | | 13 | UN | 13 | 40 |
| Fluorene | | 5.3 | U | 5.3 | 30 |
| ndeno[1,2,3-cd]pyrene | | 12 | UN | 12 | 30 |
| Naphthalene | | 12 | U | 12 | 100 |
| Phenanthrene | | 12 | . U | 12 | 40 |
| Pyrene | • | 12 | U | 12 | 40 |

Surrogate Terphenyl-d14 (SUR) %Rec 79

Qualifier

Acceptance Limits

72 - 115

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL64

Lab Sample ID:

280-54971-10

Client Matrix:

Solid

% Moisture:

0.0

Date Sampled: 05/01/2014 0820 Date Received: 05/02/2014 0940

| | | 8310 P | AHs (HPLC) | | | | |
|---|--|-----------------------------|--|------------|---|--|-------------------------------------|
| Analysis Method: Prep Method: Dilution: Analysis Date: Prep Date: | 8310 3550C 1.0 05/07/2014 2355 05/02/2014 1755 | Analysis Batch: Prep Batch: | 280-224587 280-224050 | | Instrument ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: Result Type: | CHHPLC_G 32.7 g 4 mL 20 uL PRIMARY | : |
| Analyte | DryWt Corrected: Y | Result (u | g/Kg) | Qualifie | r MDL | RL | |
| Acenaphthene | graphical production of the contract of the co | 9.2 | The to a district the south trade of the south | υJ | 9.2 | 92 | |
| Acenaphthylene | | 8.3 | • | u T | 8.3 | 92 | |
| Anthracene | • | 2.8 | | υブ | 2.8 | 18 | |
| Benzo[a]anthracene | 1 | 2.9 | | u 🎵 | 2.9 | 14 | |
| Benzo[a]pyrene | | 5.9 | | U | 5.9 | 14 | |
| Benzo[b]fluoranthen | ne. | 3.9 | | υ ፓ | 3.9 | 14 | |
| Benzo[g,h,i]perylene | | 6.6 | | Ui | 6.6 | 28 | |
| Benzo[k]fluoranthen | | 3.6 | | ŭ l | 3.6 | 14 | |
| Chrysene | ie. | 4.4 | | ŭ | 4.4 | 37 | |
| Dibenzo(a,h)anthrac | nan a | 10 | | Ü | 10 | 28 | |
| Fluoranthene | Serie | 12 | | ŭ | 12 | 37 | |
| Fluorene | | 4.8 | | ŭ | 4.8 | 28 | |
| | | 11 | | ŭ l | 11 . | 28 | 1 |
| indeno[1,2,3-cd]pyr | EIRC | 11 | | ŭ | 11 | 92 | |
| Naphthalene | | 11 | | Ŭ / | 11 | 37 | |
| Phenanthrene | | 11 | | u V | 11 | 37 | |
| Pyrene | | 11 | | 0 - | , . | o, | |
| Surrogate | | %Rec | | Qualifie | er Accepta | nce Limits | |
| Terphenyl-d14 (SUI | R) | 81 | * Acce | | 72 - 115 | And the second s | Commission of the Commission of the |

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-54971-1

SDG #: JP0785 SAF#: RC-189

Date SDG Closed: May 2, 2014
Data Deliverable: 7 Day / Summary

| CLIENT ID | LAB ID | ANALYSES REQUESTED | ANALYSES PERFORMED |
|-----------|--------------|--------------------|--------------------|
| J1TL55 | 280-54971-1 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL56 | 280-54971-2 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL57 | 280-54971-3 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL58 | 280-54971-4 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL59 | 280-54971-5 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL60 | 280-54971-6 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL61 | 280-54971-7 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL62 | 280-54971-8 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL63 | 280-54971-9 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL64 | 280-54971-10 | 8310 | 8310 |

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 5/2/2014 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.4° C.

GC SEMIVOLATILES - NWTPH-Dx - DRO

No anomalies were encountered.

HPLC - SW846 8310 - PAHs

The LCS, MS and MSD associated with sample J1TL63 in batch 280-225338 exhibited percent recoveries outside the control limits, biased low, for Benzo(b)fluoranthene. It can be noted that this was the third extraction/analysis of sample J1TL63. Two previous extractions/analyses performed on sample J1TL63 showed no detectable concentrations, but exhibited surrogate recovery or multiple LCS outliers. As the sample has been confirmed to be Non-Detect, a fourth extraction/analysis was not initiated. The client was notified on 5/15/2014.

The MS aliquot of the MS/MSD performed on sample J1TL55 in batch 280-224050 exhibited all spike compound recoveries and the surrogate recovery outside the control limits, biased low. The associated sample results have been flagged "N". As a result of the low MS recoveries, the MS/MSD RPD limits were exceeded. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The MS/MSD performed on sample J1TL63 in batch 280-225338 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

| Washington Clo | sure Hanfe | ord CHA | IN OF CUST | ODY/S | AMPL | E ANAL | LYSI | S REQL | IEST | T RC-189-286 Page 1 of | | | of2 |
|---|---------------------------------------|--------------------|---------------------------------|-----------------------------------|------------------|-------------|-------------------|----------------------------|---------|----------------------------|-----------|------------|-----------|
| Collector | · · · · · · · · · · · · · · · · · · · | Compan | y Contact | Tek | phone No. | | | Project Coordin KESSNER | ator | Price Code Data Turnaround | | | maround . |
| Q. STOWE | | | Kessner | 375 | -4688 | | | SAF No. | JH | | | | |
| Project Designation 100N Field Remediation | | | g Location N-99 Verification | | | , | | RC-189 | | 7 8 | ay | | |
| ice Chest No. | | | gbook No. | T/ | COA | | | Method of Ship | ment | | | ** 1 | |
| WCH - 14 009 | | B 0.00000 0.000 | 652-11 | - 1 | 000N992 | 000 | | | | 1Fed 8 | <u>`x</u> | | |
| Shipped To | | Offsite F | roperty No. | | | | | Billi of Lading/ | | | | | |
| TestAmerica Denver | | | 13//35 | | | | 1 | See 1 | 2580 | | | | |
| Other Labs Shipped To | | | Preservation | Cool 4C | Ç∞i 4C | | | | | | | | |
| | | | Type of Container | #G | #G | | | | | | | | |
| POSSIBLE SAMPLE HAZAR | DS/REMARKS | | No. of Container(s) | 1 | 1 | | | | | | - | | |
| None | | | Volume | 125mL | 250mL | | | | | | | | |
| Special Handling and/or Sto Cool 4C | orage | | Sample Analysis | TPH-Diesel Rangs - WTPH-D + | PAHs - 8310 | | | | | .th | | | |
| Sample No. | Matrix | Sample Date | Sample Time | Prida crista | | | | | and the | | 11年14月1 | | 超級数 |
| J171.65 | SOIL | ostaliu | es 33 | × | X | | A. Tarakan and A. | | | | | | |
| JHTL56 | SOIL | 25/20/14 | 0835 | X | X | | | | | | | | |
| J B 1.57 | SOIL | ostailia | 0838 | X | × | | | | | | | 20 | |
| J1TL58 | SOIL | ostoilia | 0840 | X | X | | | | | | | | |
| J1TL59 | SOIL | 05/01/14 | 0880 | X | X | | | | | | | | |
| CHAIN OF POSS | | | Sign/Print Names | | SPEC | IAL INSTRUC | CTIONS | | | | | | |
| Relinquished By/Removed From | Date/Time 0845 | Received By/Stored | | 0845 | | | | | | | | | |
| Bringshed Byronoved From Retinguished ByrRemoved From | 5-1-14 | R.f.hlb | REAL S | 1114 | _ | | | | | | | | |
| | | | WELLEND | . 400 | 51 | | | | | | | | |
| Reform R. fe 4 (be. | | 2 1 12 5 | din Date/Time | 7 | | | | | | | | | |
| MOSher DWSHEA | 5/1/14 1200 | Fed En | Y | | | | | | | | | | |
| Ralinquished By/Removed From | Date/Time | Received By/Suffer | din Date/Time | 1 9140 | | | • | | | | | | |
| Relinquished By/Removed From | Date/Time | Received By/Stores | | | - . | | | * | | | R | EVIEWE | 10 |
| 990000000000000000000000000000000000000 | | | | | | | | | | | _ / _ | BY | 1 |
| Relinquished By/Removed From | Data/Time | Received By/Stone | d in Date/Time | | | | | | | | 1-8 | MS DATE | -) |
| Relinquished By/Removed From: | Date/Time | Received By/Stored | d in Date/Time | | | JP(| 078 | 5 | 7.0 | 7 7 4 | 1 | 5/1/14 | |
| FINAL SAMPLE Disposal Method DISPOSITION | | Dispos | ed By Date/T | Time | | | 0 0 | | | | | | |
| WCH-EE-011 | | | | | | 0:/.6 | `` | 3 | | | | | |

WCH-EE-011

| Washington Cl | osure Hanf | ord CHA | IN OF CUST | ODY/S | AMPL | E ANA | LYS | IS REQU | EST | RC-18 | 9-286 | Page 2 | | |
|--|-------------|---|---------------------------------|-----------------------------------|--------------------|---|----------|-------------------|------------|-------------------|----------|----------|--------------|--|
| Collector Collector | OJUIG HAIII | Company Contact Telephon Joan Kessner 375-468 | | | phone No. | KESSNER, JH | | | ENO! | Price Code Data T | | | Dnucramui | |
| Project Designation | | A Secretary Secretary | g Location N-99 Verification | | | | | 8AF No. RC-189 | | 7 90 | <u>"</u> | | | |
| 100N Field Remediation lce Chest No. WCH-11-009 | | Field Lo | gbook No. 852-11 | | 000N992 | 000 | | 200000 00000000 | Carrier\ | F-ed 8x | | | | |
| Shipped To TestAmerica Denver | | Offsite P | roperty No. 131/35 | | | | | Bill of Lading/A | FBU No. | 25 | | | | |
| Other Labs Shipped To | | | Preservation | Cool 4C | Cool 4C | | | | | | | | | |
| N/+ | | | Type of Container | #G | 8 G | | | | | | | | | |
| POSSIBLE SAMPLE HAZA | RDS/REMARKS | | No. of Container(s) | 1 | 1 | | | | | | | | | |
| None | | | Volume | 125mL | 250mL | | | | | - | | | | |
| Special Handling and/or S Cool 4C | storage | | Sample Analysis | TPH-Diesal Range - WTPH-D + | PAHs - 8310 | | | | | | | | | |
| ອ ເດ ປ Sample No. | Matrix | Sample Date | Sample Time | This was a second | THE REAL PROPERTY. | NAME OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, | - TENERS | ALCONOL DE | HISTORY | and Processing | | 制的組織 | | |
| J111.60 | SOIL | 05/01/14 | 0832 | × | × | | | | | | | | | |
| J17661 | SOIL | 05/01/14 | 0336 | X | X | | | | | | | | | |
| J1 862 | SOIL | 05/00/14 | 0878 | X | X | | | | | | | | - | |
| J1TL63 | SOIL | 22/01/14 | 0832 | X | X | | | | | | 1 | | | |
| J1TL64 | SOIL | 05/01/14 | 0830 | MIA | X | | | | | | <u> </u> | | <u> </u> | |
| CHAIN OF POS | SSESSION | | Sign/Print Names | | | IAL INSTR | UCTION | is . | | | | | | |
| Ratinquished By/Ramoved From Only Stone Reimquished By/Ramoved From Reamquished By/Ramoved From Reamquished By/Ramoved From | | Received By/Store Received By/Store | R FAH LES | 5-1-1 | 25 | | | | | | | | | |
| Rainquiehed By/Ramoved From | DeterTime | Received By/Store | VXX. 5/2/1 | 14 9:40 | | | | | | | e de | | | |
| Retinquished By/Removed From | Deta/Time | Received By/Ston | ed in DeterTim | 0 | | | 7. | | | * | - | EVIEWE | | |
| Relinquished By/Removed From | DateTime | Received By/Ston | ed in Date/Time | • | | | | | | | (-2 | DATE |) | |
| Relinquished By/Removed From | Date/Time | Received By/Ston | ed in Date/Tim | e · | | JP | 078 | 5 | LINE DE LE | 7 | | 5/1/14 | | |
| FINAL SAMPLE Disposal Methods DISPOSITION | nod | Diapo | sed By Date | /Trans | | | | | | | | <u> </u> | | |

Appendix 5

Data Validation Supporting Documentation

| VALIDATIÓN LEVEL: | A | В | (c) | . D | E : |
|----------------------|-------------------|-----------|--|-----------|------------|
| PROJECT: | 00-10 - | 95 | DATA PACKAG | E: JP07 | 8,5 |
| VALIDATOR: | FLR | LAB: TA | | DATE: ' S | 123/14 |
| | | | SDG: | JP07 | 185 |
| | | ANALYSES | PERFORMED | | |
| 8015 | 8021 | 8141 | 8151 | 8315 | (2310) |
| | | WTPH-HCID | WTPH-G | WTPH-D | |
| | | | | | |
| SAMPLES/MAT | RIX: | | | | |
| JITLSS | JIT | 156 | JITLS7 | VITCE | ₹ ₹ |
| 11769 | JIT | L60 | JHL61 | JITL | ζ > |
| JITL63 | | | | | |
| | | | | | |
| | | | | | Soil |
| Technical verificat | ACKAGE COMPI | present? | ······································ | | Yes No N/A |
| | MENT TUNING A | | • | , | Yes No N/A |
| Continuing calibra | tions acceptable? | | | | Yes No N/A |
| Standards traceable | e? | | | | Yes No N/A |
| |) | | | | 1 / |
| | acceptable? | | | · · | Yes No N/A |
| Comments: | | | | | |
| | | | | | |

| 3. BLANKS (Levels B, C, D, and E) | | | |
|---|---------------|----------|-------|
| Calibration blanks analyzed? (Levels D, E) | | | / |
| Calibration blank results acceptable? (Levels D, E) | Yes | No(| N/A |
| Laboratory blanks analyzed? | (Yes) | No | N/A |
| Laboratory blank results acceptable? | | | N/A |
| Field/trip blanks analyzed? (Levels C, D, E) | Yes(| Ng | N/A |
| Field/trip blank results acceptable? (Levels C, D, E) | Yes | No | WA |
| Transcription/calculation errors? (Levels D, E) | Yes | Nó | NA |
| Comments: | No For | > | |
| | | | |
| | | · · | |
| | | <u> </u> | |
| | | | · |
| 4. ACCURACY (Levels C, D, and E) | | , | |
| Surrogates/system monitoring compounds analyzed? | Xes |) No | N/A |
| Surrogate/system monitoring compound recoveries acceptable? | (Ye) | No | N/A |
| Surrogates traceable? (Levels D, E) | | | N/A |
| Surrogates expired? (Levels D, E) | <u>Ye</u> s | No | (N/A) |
| MS/MSD samples analyzed? | (<u>Y</u> ęs | No | N/A |
| MS/MSD results acceptable? | (Yg)s | No | N/A |
| MS/MSD standards NIST traceable? (Levels D, E) | Yes | No | (WA |
| MS/MSD standards expired? (Levels D, E) | <u>Ye</u> ş | No | (N/A |
| LCS/BSS samples analyzed? | (| No | N/A |
| LCS/BSS results acceptable? | (Ye) | No | N/4 |
| Standards traceable? (Levels D, E) | Yes | No | |
| Standards expired? (Levels D, E) | Yes | No | MA |
| Transcription/calculation errors? (Levels D, E) | Yes | Na | NIA |
| Performance audit sample(s) analyzed? | Ye | No |)n/a |
| Performance audit sample results acceptable? | Yes | No | N/A |
| Comments: | | | |
| | | | |
| | 10004 | | |
| | 119 | | |

| 5. | PRECISION (Levels C, D, and E) | | |
|---------------|--|-------------------|--------|
| Dupli | icate RPD values acceptable? | Yes (No) | N/A |
| Dupli | icate results acceptable? | Yes No | N/A |
| MS/N | MSD standards NIST traceable? (Levels D, E) | Yes No | NHA) |
| MS/N | MSD standards expired? (Levels D, E) | Yes No | N/A) |
| Field | duplicate RPD values acceptable? | Yes No | N/A |
| | split RPD values acceptable? | | |
| Trans Comi | rnents: \(\daggerapha \) \(\lambda \) \(\daggerapha \) \(| ell by form | NA Jey |
| | | 10000000 | 4/10 |
| | | 19 tu co (-) 11 | 9 |
| | | | |
| | | | |
| 6. | HOLDING TIMES (all levels) | 10 | |
| Samp | ples properly preserved? | Yes No | N/A |
| _ | ple holding times acceptable? | 7 / | N/A |
| | ments: | | |
| | | | · |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| 8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIN | AITS (all | | |
|---|-----------|----|--------------------------|
| levels) | 7 | _ | |
| Results reported for all requested analyses? | Yok | No | ₩\ • |
| Results supported in the raw data? (Levels D, E) | Yes | No | |
| Samples properly prepared? (Levels D, E) | Yes | No | W |
| Detection limits meet RDL? | (Ye) | No | N/A |
| Transcription/calculation errors? (Levels D, E) | Yes | Nd | N/A |
| Comments: | | | |
| | | | |
| | | | : - - |
| | | | |
| 9. SAMPLE CLEANUP (Levels D and E) | | | (|
| Fluoricil ® (or other aborbant) cleanup performed? | Yes | No | N/A |
| Lot check performed? | Yes | No | N/A |
| Check recoveries aceptable? | Yes | No | N/A |
| Check materials traceable? | Yes | No | N/A |
| Check materials Expired? | Yes | No | N/A |
| Analytical batch QC given similar cleanup? | Yes | Ne | N/A |
| Transcription/Calculation Errors? | Yes | No | N/A |
| Comments: | | | $\overline{\mathcal{L}}$ |
| , | | | |
| | | | |
| | | | |

Appendix 6

Additional Documentation Requested by Client

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Method Blank - Batch: 280-224050

Method: 8310 Preparation: 3550C

| Lab Sample IC |
|----------------|
| Client Matrix: |
| Dilution: |

MB 280-224050/1-A Solid 1.0

Analysis Batch: Prep Batch: Leach Batch: Units:

280-224587 280-224050 N/A ug/Kg

Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:

CHHPLC_G G0507016.D 31.9 g 4 mL 20 uL

Analysis Date: Prep Date:

05/07/2014 1647 05/02/2014 1755

Leach Date:

| Injection Volume: |
|-------------------|
| Column ID: |

PRIMARY

| Analyte | Result | Qual | MDL | RL | |
|------------------------|--------|------|-------------------|----|---|
| Acenaphthene | 9.4 | U | 9.4 | 94 | |
| Acenaphthylene | 8.5 | U | 8.5 | 94 | |
| Anthracene | 2.9 | U | 2.9 | 19 | í |
| Benzo[a]anthracene | 3.0 | υ | 3.0 | 14 | |
| Benzo[a]pyrene | 6.0 | U | 6.0 | 14 | 1 |
| Benzo[b]fluoranthene | 3.9 | U | 3.9 | 14 | 1 |
| Benzo[g,h,i]perylene | 6.8 | U | 6.8 | 28 | 1 |
| Benzo[k]fluoranthene | 3.7 | U | 3.7 | 14 | 1 |
| Chrysene | 4.6 | U | 4.6 | 38 | : |
| Dibenzo(a,h)anthracene | 10 | U | 10 | 28 | |
| Fluoranthene | 12 | U | 12 | 38 | |
| Fluorene | 5.0 | U | 5.0 | 28 | |
| Indeno[1,2,3-cd]pyrene | 11 | U | 11 | 28 | |
| Naphthalene | 11 | U | 11 | 94 | |
| Phenanthrene | 11 | U | 11 | 38 | |
| Pyrene | 11 | Ü | 11 | 38 | |
| Surrogate | % Rec | | Acceptance Limits | | |

Terphenyl-d14 (SUR)

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Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Lab Control Sample - Batch: 280-224050

Method: 8310 Preparation: 3550C

| Lab | S | arr | ıpk |) ID |
|------|-----|-----|------|------|
| Clie | nt | M | atri | X: |
| Dilu | tio | n: | | |
| | | | _ | |

LCS 280-224050/2-A Solid 1.0 Analysis Batch: Prep Batch: Leach Batch: Units: 280-224587 280-224050 N/A ug/Kg Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:

Injection Volume:

Column ID:

CHHPLC_G G0507017.D 30.5 g 4 mL 20 uL

PRIMARY

Analysis Date: Prep Date: 05/07/2014 1718 05/02/2014 1755

Leach Date: N/A

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|------------------------|--------------|--------|--------|------------------|-------------|
| Acenaphthene | 1970 | 1630 | 83 | 78 - 116 | |
| Acenaphthylene | 1970 | 1570 | 80 | 76 - 115 | : |
| Anthracene | 1970 | 1540 | 79 | 74 - 115 | |
| Benzo[a]anthracene | 1970 | 1770 | 90 | 85 - 120 | |
| Benzo[a]pyrene | 1970 | 1710 | 87 | 74 - 121 | 1 |
| Benzo[b]fluoranthene | 1970 | 1680 | 85 | 85 - 115 | |
| Benzo[g,h,i]perylene | 1970 | 1830 | 93 | 85 - 120 | 1 |
| Benzo[k]fluorantherie | 197 0 | 1760 | 90 | 85 - 115 | i |
| Chrysene | 1970 | 1730 | 88 | 83 - 115 | |
| Dibenzo(a,h)anthracene | 1970 | 1710 | 87 | 83 - 115 | |
| luoranthene | 1970 | 1690 | 86 | 83 - 115 | |
| luorene | 1970 | 1680 | 85 | 80 - 115 | |
| ndeno[1,2,3-cd]pyrene | 1970 | 1770 | 90 | 85 - 123 | |
| Naphthalene | 1970 | 1690 | 86 | 80 - 121 | |
| Phenanthrene | 1970 | 1660 | 84 | 80 - 115 | • |
| Pyrene | 1970 | 1690 | 86 | 75 - 116 | : |
| Surrogate | % | Rec | A | cceptance Limits | : |

Terphenyl-d14 (SUR)

77

72 - 115

20 uL

PRIMARY

Method: 8310

Injection Volume:

Column ID:

Client: Washington Closure Hanford

05/02/2014 1755

N/A

Matrix Spike/

Prep Date:

Leach Date:

Job Number: 280-54971-1

Sdg Number: JP0785

| Matrix Spike Dup | Matrix Spike Duplicate Recovery Report - Batch: 280-224050 Preparation: 3550C | | | | |
|---|---|--|---------------------------------|--|--|
| MS Lab Sample ID: Client Matrix: Dilution: Analysis Date: Prep Date: Leach Date: | 280-54971-1 Solid 1.0 05/07/2014 1819 05/02/2014 1755 N/A | Analysis Batch: Prep Batch: Leach Batch: | 280-224587 280-224050 N/A | Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: Column ID: | CHHPLC_G G0507019.D 30.2 g 4 mL 20 uL PRIMARY |
| MSD Lab Sample II | D: 280-54971-1 | Analysis Batch: | 280-224587 | Instrument ID: | CHHPLC_G |
| Client Matrix: | Solid | Prep Batch: | 280-224050 | Lab File ID: | G0507020.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 30.0 g |
| Analysis Date: | 05/07/2014 1849 | | | Final Weight/Volume: | 4 mL |

| | <u>% Rec.</u> | | | | | | | |
|------------------------|---------------|----------|-----------------------------|-----|-----------|----------|-----|------|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD | Qual |
| Acenaphthene | 58 | 83 | 78 - 116 | 37 | 20 | N | * | 1 |
| Acenaphthylene | 55 | 80 | 76 - 115 | 38 | 21 | N | • | |
| Anthracene | 55 | 79 | 74 - 115 | 37 | 20 | N | * | |
| Benzo[a]anthracene | 64 | 91 | 85 - 120 | 35 | 20 | N | * | 1 |
| Benzo[a]pyrene | 62 | 84 | 74 - 121 | 30 | 20 | N | • | i |
| Benzo[b]fluoranthene | 61 | 85 | 85 - 115 | 35 | 20 | N | • | : |
| Benzo[g,h,i]perylene | 66 | 92 | 85 - 120 | 34 | 20 | N | * | |
| Benzo[k]fluoranthene | 64 | 89 | 85 - 115 | 33 | 20 | N | ** | |
| Chrysene | 62 | 89 | 83 - 115 | 36 | 20 | N | * | : |
| Dibenzo(a,h)anthracene | 62 | 85 | 83 - 115 | 33 | 20 | N | * | 1 |
| luoranthene | 61 | 87 | 83 - 115 | 36 | 20 | N | * | : |
| Fluorene | 60 | 86 | 80 - 115 | 36 | 20 | N | * | I |
| ndeno[1,2,3-cd]pyrene | 62 | 88 | 85 - 123 | 35 | 20 | N | * | : |
| Vaphthalene | 59 | 86 | 80 - 121 | 39 | 20 | N | * | : |
| Phenanthrene | 60 | 85 | 80 - 115 | 36 | 20 | N | * | - |
| Pyrene | 61 | 87 | 75 - 116 | 36 | 20 | N | * | ! |
| Surrogate | | MS % Rec | MSD % Rec Acceptance Limits | | s | | | |
| Terphenyl-d14 (SUR) | | 57 | * 79 | | | 72 - 115 | | ; |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-224050

Method: 8310

MS Lab Sample ID:

280-54971-1

Preparation: 3550C

Client Matrix:

Solid

Units: ug/Kg

MSD Lab Sample ID:

280-54971-1

1.0

Client Matrix:

Solid

Dilution:

Dilution:

1.0

Analysis Date: Prep Date:

05/07/2014 1819 05/02/2014 1755 Analysis Date: Prep Date:

05/07/2014 1849 05/02/2014 1755

Leach Date:

N/A

Leach Date:

N/A

| | Sample | | MS Spike | MSD Spike | MS | | MSD | 1 |
|------------------------|----------|-------------|----------|---------------|------|-------------|------|-----|
| Analyte | Result/0 | Result/Qual | | Amount Amount | | Result/Qual | | ual |
| Acenaphthene | 10 | U | 2000 | 2010 | 1150 | N | 1670 | |
| Acenaphthylene | 9.0 | Ų | 2000 | 2010 | 1100 | N | 1620 | . * |
| Anthracene | 3.0 | U | 2000 | 2010 | 1100 | N | 1600 | |
| Benzo(a)anthracene | 3.2 | Ų | 2000 | 2010 | 1280 | N | 1830 | * |
| Benzo(a)pyrene | 6.4 | U | 2000 | 2010 | 1240 | N | 1680 | * |
| Benzo[b]fluoranthene | 4.2 | Ų | 2000 | 2010 | 1210 | N | 1720 | • |
| Benzo[g,h,i]perylene | 7.2 | U | 2000 | 2010 | 1320 | N | 1860 | • |
| Benzo[k]fluoranthene | 3.9 | U | 2000 | 2010 | 1280 | N | 1790 | • |
| Chrysene | 4.8 | U | 2000 | 2010 | 1250 | N | 1790 | * |
| Dibenzo(a,h)anthracene | 11 | U | 2000 | 2010 | 1230 | N | 1720 | • |
| luoranthene | 13 | U | 2000 | 2010 | 1220 | N | 1750 | |
| Fluorene | 5.3 | U | 2000 | 2010 | 1190 | N | 1720 | . • |
| ndeno[1,2,3-cd]pyrene | 12 | U | 2000 | 2010 | 1250 | N | 1770 | * |
| Naphthalene | 12 | U | 2000 | 2010 | 1180 | N | 1740 | * |
| Phenanthrene | 12 | U | 2000 | 2010 | 1190 | N | 1710 | . * |
| Pyrene | 12 | U | 2000 | 2010 | 1220 | N | 1750 | |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Method Blank - Batch: 280-225338

Method: 8310 Preparation: 3550C

Lab Sample ID: Client Matrix: Dilution: MB 280-225338/1-A Solid 1.0 Analysis Batch: Prep Batch: Leach Batch: Units: 280-225681 280-225338 N/A

ug/Kg

Instrument ID: Lab File ID:

Initial Weight/Volume:

CHHPLC_G G0514008.D 30.2 g

Analysis Date: Prep Date: 05/14/2014 1110 05/12/2014 1434 Final Weight/Volume: Injection Volume: 4 mL 20 uL

Leach Date:

N/A

| Column | ID: |
|--------|-----|
|--------|-----|

i Volume: 20 uL ID: PRIMARY

| Analyte | Result | Qual | MDL | RL | : |
|------------------------|--------|------|-------------------|----|---|
| Acenaphthene | 9.9 | U | 9.9 | 99 | |
| Acenaphthylene | 8.9 | U | 8.9 | 99 | • |
| Anthracene | 3.0 | U | 3.0 | 20 | i |
| Benzo[a]anthracene | 3.2 | U | 3.2 | 15 | 1 |
| Benzo[a]pyrene | 6.4 | U | 6.4 | 15 | |
| Benzo[b]fluoranthene | 4.2 | U | 4.2 | 15 | |
| Benzo[g,h,i]perylene | 7.2 | υ | 7.2 | 30 | ! |
| Benzo[k]fluoranthene | 3.9 | U | 3.9 | 15 | : |
| Chrysene | 4.8 | U | 4.8 | 40 | |
| Dibenzo(a,h)anthracene | 11 | U | 11 | 30 | |
| Fluoranthene | 13 | U | 13 | 40 | |
| Fluorene | 5.2 | U | 5.2 | 30 | 1 |
| Indeno[1,2,3-cd]pyrene | 12 | U | 12 | 30 | i |
| Naphthalene | 12 | U | 12 | 99 | 1 |
| Phenanthrene | 12 | U | 12 | 40 | |
| Pyrene | 12 | U | 12 | 40 | |
| Surrogate | % Rec | | Acceptance Limits | | |

Terphenyl-d14 (SUR)

78

72 - 115

TestAmerica Denver

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Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Lab Control Sample - Batch: 280-225338

Method: 8310 Preparation: 3550C

| Lab Sample ID: |
|----------------|
| Client Matrix: |
| Dilution: |

LCS 280-225338/2-A Solid 1.0 Analysis Batch: Prep Batch: Leach Batch:

Units:

280-225681 280-225338 N/A

ug/Kg

Instrument ID: Lab File ID: Initial Weight/Volume: CHHPLC_G G0514009.D 30.9 g

Analysis Date: Prep Date: 05/14/2014 1140 05/12/2014 1434 Final Weight/Volume: Injection Volume: Column ID: 4 mL 20 uL PRIMARY

Leach Date:

N/A

| Ana lyte | Spike Amount | Result | % Rec. | Limit | Qual |
|-------------------------|--------------|--------|--------|------------------|------|
| Acenaphthene | 1940 | 1560 | 80 | 78 - 116 | |
| Acenaphthylene | 1940 | 1490 | 77 | 76 - 115 | |
| Anthracene | 1940 | 1460 | 75 | 74 - 115 | |
| Benzo[a]anthracene | 1940 | 1680 | 87 | 85 - 120 | , |
| Benzo(a)pyrene | 1940 | 1610 | 83 | 74 - 121 | * |
| Benzo[b]fluoranthene | 1940 | 1600 | 82 | 85 - 115 | N; |
| Benzo[g,h,i]perylene | 1940 | 1730 | 89 | 85 - 120 | ; |
| Benzo[k]fluoranthene | 1940 | 1680 | 86 | 85 - 115 | 1 |
| Chrysene | 1940 | 1650 | 85 | 83 - 115 | |
| Dibenzo(a,h)anthracene | 1940 | 1610 | 83 | 83 - 115 | : |
| Fluoranthene | 1940 | 1610 | 83 | 83 - 115 | i |
| Fluorene | 1940 | 1590 | 82 | 80 - 115 | |
| indeno[1,2,3-cd]pyrene | 1940 | 1650 | 85 | 85 - 123 | |
| Naphthalen e | 1940 | 1620 | 83 | 80 - 121 | : |
| Phenanthrene | 1940 | 1590 | 82 | 80 - 115 | : |
| Pyrene | 1940 | 1610 | 83 | 75 - 116 | ! |
| Surrogate | % | Rec | А | cceptance Limits | |

Terphenyl-d14 (SUR)

80

72 - 115

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-225338

Method: 8310 Preparation: 3550C

MS Lab Sample ID: Client Matrix:

Solid

280-54971-9

Analysis Batch:

280-225681

Instrument ID: Lab File ID:

CHHPLC_G

G0514011.D

Dilution:

1.0

Prep Batch: Leach Batch: 280-225338 N/A

Initial Weight/Volume:

30.9 g

Analysis Date: Prep Date:

05/14/2014 1241 05/12/2014 1434 Final Weight/Volume: Injection Volume:

Column ID:

4 mL 20 uL PRIMARY

Leach Date:

N/A

Analysis Batch:

280-225681 Instrument ID: 280-225338 Lab File ID:

CHHPLC_G

Client Matrix: Dilution:

Solid 1.0

MSD Lab Sample ID: 280-54971-9

Prep Batch:

N/A Initial Weight/Volume: G0514012.D 30.3 g

Analysis Date:

05/14/2014 1312

Leach Batch:

Final Weight/Volume: Injection Volume:

4 mL 20 uL

Prep Date: Leach Date: 05/12/2014 1434

81

Column ID:

PRIMARY

72 - 115

| | <u>%</u> | Rec. | | | | | |
|------------------------|----------|----------|-----------|-----|-----------|---------------|----------|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Acenaphthene | 78 | 81 | 78 - 116 | 6 | 20 | | i |
| Acenaphthylene | 75 | 78 | 76 - 115 | 5 | 21 | N | |
| Anthracene | 72 | 75 | 74 - 115 | 5 | 20 | N | į |
| Benzo[a]anthracene | 85 | 87 | 85 - 120 | 4 | 20 | | |
| Benzo[a]pyrene | 77 | 79 | 74 - 121 | 4 | 20 | | |
| Benzo[b]fluoranthene | 80 | 81 | 85 - 115 | 4 | 20 | N | N |
| Benzo[g,ħ,i]perylene | 86 | 88 | 85 - 120 | 4 | 20 | | |
| Benzo[k]fluoranthene | 83 | 85 | 85 - 115 | 4 | 20 | N | |
| Chrysene | 83 | 85 | 83 - 115 | 4 | 20 | | |
| Dibenzo(a,h)anthracene | 80 | 81 | 83 - 115 | 4 | 20 | N | N |
| Fluoranthene | 81 | 83 | 83 - 115 | 4 | 20 | N | |
| Fluorene | 80 | 83 | 80 - 115 | 6 | 20 | | 1 |
| Indeno[1,2,3-cd]pyrene | 82 | 84 | 85 - 123 | 4 | 20 | N | N |
| Naphthalene | 87 | 90 | 80 - 121 | 6 | 20 | | * |
| Phenanthrene | 80 | 82 | 80 - 115 | 5 | 20 | | 4 |
| Pyrene | 81 | 83 | 75 - 116 | 4 | 20 | | |
| Surrogate | | MS % Rec | MSD % Rec | | Acc | eptance Limit | S |

80

TestAmerica Denver

Terphenyl-d14 (SUR)

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Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-225338

Method: 8310 Preparation: 3550C

MS Lab Sample ID:

280-54971-9

280-54971-9

Client Matrix:

Solid

MSD Lab Sample ID:

200-54971-

Dilution:

Solid

Client Matrix:

Solid

Dilution.

1.0

Dilution:

1.0

Analysis Date:

05/14/2014 1241

Analysis Date:

05/14/2014 1312

Prep Date: Leach Date: 05/12/2014 1434 N/A Prep Date:

05/12/2014 1434

Leach Date:

N/A

| | Sample | | MS Spike | MSD Spike | MS | | MSD | |
|------------------------|----------|------|----------|-----------|----------|---------|-------------|-----|
| Analyte | Result/C |)ual | Amount | Amount | Result/C | al lual | Result/Qual | |
| Acenaphthene | 10 | U | 1960 | 2000 | 1540 | | 1630 | |
| Acenaphthylene | 9.0 | U | 1960 | 2000 | 1470 | N | 1550 | |
| Anthracene | 3.1 | U | 1960 | 2000 | 1420 | N | 1490 | • |
| Benzo[a]anthracene | 3.2 | U | 1960 | 2000 | 1660 | | 1730 | 1 |
| Benzo[a]pyrene | 6.4 | U | 1960 | 2000 | 1520 | | 1580 | : |
| Benzo[b]fluoranthene | 4.2 | U | 1960 | 2000 | 1560 | N | 1630 | :N |
| Benzo[g,h,i]perylene | 7.2 | U | 1960 | 2000 | 1690 | | 1760 | : |
| Benzo(k)fluoranthene | 4.0 | U | 1960 | 2000 | 1630 | N | 1690 | |
| Chrysene | 4.9 | U | 1960 | 2000 | 1630 | | 1700 | 1 |
| Dibenzo(a,h)anthracene | 11 | Ų | 1960 | 2000 | 1560 | N | 1630 | i N |
| Fluoranthene | 13 | U | 1960 | 2000 | 1590 | N | 1660 | : |
| Fluorene | 5.3 | U | 1960 | 2000 | 1560 | | 1650 | |
| Indeno[1,2,3-cd]pyrene | 12 | U | 1960 | 2000 | 1610 | N | 1670 | N |
| Naphthalene | 12 | U | 1960 | 2000 | 1700 | | 1800 | |
| Phenanthrene | 12 | U | 1960 | 2000 | 1570 | | 1640 | |
| Pyrene | 12 | U | 1960 | 2000 | 1590 | | 1660 | 1 |

Units: ug/Kg

Date:

27 May 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100N Field Remediation - Soil Full Protocol - Waste Site 100-N-99

Subject:

Diesel Range Organic - Data Package No. JP0785-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0785 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

| Sample ID | Sample Date | Media | Validation | Analyte |
|-----------|-------------|-------|------------|------------|
| J1TL55 | 5/1/14 | Soil | С | See note 1 |
| J1TL56 | 5/1/14 | Soil | С | See note 1 |
| J1TL57 | 5/1/14 | Soil | С | See note 1 |
| J1TL58 | 5/1/14 | Soil | С | See note 1 |
| J1TL59 | 5/1/14 | Soil | С | See note 1 |
| J1TL60 | 5/1/14 | Soil | С | See note 1 |
| J1TL61 | 5/1/14 | Soil | С | See note 1 |
| J1TL62 | 5/1/14 | Soil | С | See note 1 |
| J1TL63 | 5/1/14 | Soil | С | See note 1 |

^{1 -} Diesel range organics by NWTPH-Dx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

· Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TL60/J1TL63) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0785 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites, U.S. Department of Energy, October 2006.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

DIESEL RANGE ORGANIC DATA QUALIFICATION SUMMARY*

| SDG: JP0785 | REVIEWER: ELR | Project: 100-N-99 | PAGE_1_OF_1 |
|------------------------|------------------|----------------------|-------------|
| COMMENTS: No qualifier | s assigned | | |

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL55

Lab Sample iD:

280-54971-1

Client Matrix:

Solid

% Moisture:

Date Sampled: 05/01/2014 0833

Date Received: 05/02/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx

Analysis Batch:

280-224395

0.7

Instrument ID:

SGC_U

Prep Method:

3550C

Prep Batch:

280-224063

Lab File ID:

05060007.D

Dilution:

Initial Weight/Volume:

31.0 g

Analysis Date:

1.0

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Prep Date:

05/06/2014 1239 05/02/2014 1917

Result (ug/Kg)

Qualifier MDL 970

RL 3900

3900

Analyte C10-C36 C10-C28 DryWt Corrected: Y 2000 1100

J

Acceptance Limits

Surrogate o-Terphenyl %Rec 76

Qualifier

660

49 - 115

Vgrely

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample (D:

J1TL56

Lab Sample ID:

280-54971-2

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 05/01/2014 0835 Date Received: 05/02/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

3550C

NWTPH-Dx Analysis Batch:

280-224395

Instrument ID:

SGC_U

Dilution:

Prep Batch:

280-224063

Lab File ID:

05060008.D

1.0

Analysis Date:

Initial Weight/Volume:

30.1 g

Prep Date:

05/06/2014 1308 05/02/2014 1917

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Analyte

DryWt Corrected: Y

Result (ug/Kg)

Qualifier MDL

RL 4100

C10-C36 C10-C28 22000 12000

1000 690

4100

Surrogate o-Terphenyl %Rec

Qualifier

Acceptance Limits

79

49 - 115

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL57

Lab Sample ID:

280-54971-3

Client Matrix:

Solid

% Moisture:

3.2

Date Sampled: 05/01/2014 0838 Date Received: 05/02/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx

Analysis Batch:

280-224395

Instrument ID:

SGC_U

Prep Method:

3550C

Prep Batch:

280-224063

Lab File ID:

05060009.D

Dilution:

1.0

Initial Weight/Volume:

Analysis Date:

31.5 g

Prep Date:

05/06/2014 1337 05/02/2014 1917 Final Weight/Volume: Injection Volume:

1 mL 1 uL

Analyte C10-C36 C10-C28 DryWt Corrected: Y Result (ug/Kg) 3600 1800

Qualifier MDL 980 J 670

RL 3900 3900

Surrogate o-Terphenyl

%Rec 75

Qualifier

Acceptance Limits

49 - 115

Mally

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL58

Lab Sample ID:

280-54971-4

Client Matrix:

Solid

% Moisture:

1.2

Date Sampled: 05/01/2014 0840

Date Received: 05/02/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx

3550C

Analysis Batch: Prep Batch:

280-224395

Instrument ID:

SGC_U

Prep Method:

280-224063

Dilution:

Lab File ID:

05060010.D

Analysis Date:

Initial Weight/Volume:

30.3 g

Prep Date:

05/06/2014 1406 05/02/2014 1917 Final Weight/Volume: Injection Volume:

MDL

1000

680

1 mL 1 uL

Analyte C10-C36 C10-C28 DryWt Corrected: Y

Result (ug/Kg) 2100 1300

Qualifier

RL 4000 4000

Surrogate o-Terphenyl

%Rec

Qualifier

Acceptance Limits

75

49 - 115

V 5/24/14

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL59

Lab Sample ID:

280-54971-5

Client Matrix:

Solid

% Moisture:

1.0

Date Sampled: 05/01/2014 0830 Date Received: 05/02/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx

Analysis Batch:

280-224395

Instrument ID:

SGC_U

Prep Method:

3550C

Prep Batch:

Lab File ID:

Dilution:

1.0

280-224063

05060011.D

Initial Weight/Volume:

30.8 g

Analysis Date: Prep Date:

05/06/2014 1436 05/02/2014 1917

Final Weight/Volume: Injection Volume:

1 mL 1 uL

| Analyte |
|---------|
| C10-C36 |
| C10-C28 |

DryWt Corrected: Y

Result (ug/Kg) 1900 1200

Qualifier MDL 980 670

RL 3900 3900

Surrogate o-Terphenyl

%Rec

Qualifier

J

Acceptance Limits

77

49 - 115

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL60

Lab Sample ID:

280-54971-6

Client Matrix:

Solid

% Moisture:

1.0

Date Sampled: 05/01/2014 0822 Date Received: 05/02/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-224395

Instrument ID:

SGC_U

Prep Method:

Prep Batch:

280-224063

Lab File ID:

Dilution:

05060014.D

Analysis Date:

Initial Weight/Volume:

30.6 g

Prep Date:

05/06/2014 1602 05/02/2014 1917

Final Weight/Volume: Injection Volume:

1 mL 1 uL

| Analyte | |
|---|---|
| A laiyle | |
| *************************************** | * |
| C10-C36 | |

DryWt Corrected: Y

Result (ug/Kg) 2200 1300 J

Qualifier MDL 990 670

RL. 4000 4000

C10-C28 Surrogate o-Terphenyl

%Rec

Qualifier

Acceptance Limits

73

49 - 115

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL61

Lab Sample ID:

280-54971-7

Client Matrix:

Solid

% Moisture:

1.0

Date Sampled: 05/01/2014 0826 Date Received: 05/02/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch: Prep Batch:

280-224395

Instrument ID:

SGC_U

Prep Method: Dilution:

1.0

Lab File ID:

05060015.D

280-224063

Initial Weight/Volume:

Analysis Date:

05/06/2014 1631

Final Weight/Volume:

32.0 g 1 mL

Prep Date:

05/02/2014 1917

Injection Volume:

1 uL

| Analyte | |
|---------|--|
| C10-C36 | |
| C10-C28 | |

DryWt Corrected: Y

Result (ug/Kg) 1500 950

Qualifier MDL 940 640

3800 3800

RL

Surrogate o-Terphenyl

%Rec

Qualifier

J

J

Acceptance Limits

72

49 - 115

W5/24/14

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL62

Lab Sample ID:

280-54971-8

Client Matrix:

Solid

% Moisture:

1.1

Date Sampled: 05/01/2014 0828

Date Received: 05/02/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx 3550C

Analysis Batch:

280-224395

Instrument ID:

SGC_U

Prep Batch:

Lab File ID:

05060016.D

Dilution:

280-224063

Initial Weight/Volume:

Analysis Date:

1.0

30.5 g

Prep Date:

05/06/2014 1700 05/02/2014 1917

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Analyte C10-C36 DryWt Corrected: Y

Result (ug/Kg) 1800 1100

Qualifier MDL 990 J 670

RL 4000 4000

Surrogate o-Terphenyl

C10-C28

%Rec 78

Qualifier

Acceptance Limits

49 - 115

Maller

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Client Sample ID:

J1TL63

Lab Sample ID:

280-54971-9

Client Matrix:

Solid

% Moisture:

0.9

Date Sampled: 05/01/2014 0822 Date Received: 05/02/2014 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-224395

Instrument ID:

SGC_U

Prep Method:

Prep Batch:

280-224063

Lab File ID:

05060017.D

Dilution:

1.0

Initial Weight/Volume:

Analysis Date:

Final Weight/Volume:

30.1 g

Prep Date:

05/06/2014 1729 05/02/2014 1917

Injection Volume:

1 mL 1 uL

Analyte C10-C36 DryWt Corrected: Y

Result (ug/Kg) 1600 1000

Qualifier

MDL 1000 680

RL 4000 4000

C10-C28 Surrogate

%Rec

Qualifier

Acceptance Limits

o-Terphenyl

78

49 - 115

Myruly

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-54971-1

SDG #: JP0785 SAF#: RC-189

Date SDG Closed: May 2, 2014 Data Deliverable: 7 Day / Summary

| CLIENT ID J1TL55 | <u>LAB ID</u> 280-54971-1 | ANALYSES REQUESTED WTPH-D+/8310 | ANALYSES PERFORMED NWTPH-Dx/8310 |
|---------------------|------------------------------|---------------------------------|----------------------------------|
| J1TL56 | 280-54971-2 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL57 | 280-54971-3 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL58 | 280-54971-4 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL59 | 280-54971-5 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL60 | 280-54971-6 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL61 | 280-54971-7 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL62 | 280-54971-8 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL63 | 280-54971-9 | WTPH-D+/8310 | NWTPH-Dx/8310 |
| J1TL64 | 280-54971-10 | 8310 | 8310 |

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 5/2/2014 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.4° C.

GC SEMIVOLATILES - NWTPH-Dx - DRO

No anomalies were encountered.

HPLC - SW846 8310 - PAHs

The LCS, MS and MSD associated with sample J1TL63 in batch 280-225338 exhibited percent recoveries outside the control limits, biased low, for Benzo(b)fluoranthene. It can be noted that this was the third extraction/analysis of sample J1TL63. Two previous extractions/analyses performed on sample J1TL63 showed no detectable concentrations, but exhibited surrogate recovery or multiple LCS outliers. As the sample has been confirmed to be Non-Detect, a fourth extraction/analysis was not initiated. The client was notified on 5/15/2014.

The MS aliquot of the MS/MSD performed on sample J1TL55 in batch 280-224050 exhibited all spike compound recoveries and the surrogate recovery outside the control limits, biased low. The associated sample results have been flagged "N". As a result of the low MS recoveries, the MS/MSD RPD limits were exceeded. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The MS/MSD performed on sample J1TL63 in batch 280-225338 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

| Washington Cl | Washington Closure Hanford CHAIN OF CUSTODY/SAM | | | SAMPL | IPLE ANALYSIS REQUEST | | | | | 89-286 | Page 1 | Page 1 of2 | | | |
|---|---|--------------------|---|-----------------------------------|-----------------------|------------|---------------------------------------|-------------------|---------|------------|-----------|-------------|-------------------|--|--|
| Collector O. Stowe | | Compan Joan | Company Contact Telephone Joan Kessner 375-4688 | | | | o. Project Coordinator KESSNER, JH | | | Price Code | | Deta Tu | Data Turnaround . | | |
| Project Designation 100N Field Remediation | | | g Location N-99 Verification | | | | * | SAF No. RC-189 | | 7. 8 | ay | | V 42 | | |
| ice Chest No. | | Field Lo | gbook No. | | COA | | | Method of Sh | pment | 1Fed 8 | | | | | |
| WCH-11-009 | | | 652-11 Property No. | | 000N992 | 2000 | | Bill of Lading | | | X | | | | |
| Shipped To TestAmerica Denver | | | 13//35 | | | | | | 1920 | • | | | | | |
| Other Labe Shipped To | | | Preservation | Cool 4C | Cool 4C | | | | | | | | | | |
| | | | Type of Container | #G | #G | | | | | | | | | | |
| POSSIBLE SAMPLE HAZAI | RDS/REMARKS | | No. of Container(s) | 1 | 1 | | | | | | | | | | |
| None | | | Volume | 125mL | 250mL | | | | | | | | | | |
| Special Handling and/or Ste | orage | | Sample Analysis | TPH-Dissel Range - WTPH-D + | PAHs - 8310 | | | | | | | | | | |
| ਾਹ co 6 Sample No. | Matrix | Sample Date | Sample Time | 1000 | AMAN | MANNER | N. AL | TI Jewani | A MELET | | THE PARTY | 建設的船 | 赵 康司 | | |
| JH1L55 | \$OIL | osladiu | · cs 33 | X | X | | | | | | | | | | |
| JA11.56 | SOIL | 25/20/14 | 0835 | X | X | | | | | | | | | | |
| J 2 L57 | SOIL | related | 0838 | X | × | | | | | | | | | | |
| J1TL58 | SOIL | ostorlia | 0240 | X | X | | | | | | | | | | |
| J1TL59 | SOIL | 05/01/14 | 0830 | X | X | | | | | | | | | | |
| CHAIN OF POSS | ESSION | | Sign/Print Names | | SPEC | IAL INSTRU | UCTION | \$ | | | | | | | |
| Retinquished By/Removed From | Date/Time 0845 | Received By/Stored | | 0845 | | | | | | | | | | | |
| Owney Howe The Relinquished By/Removed From | 5-1-14 Date/Time (60 5 | Received By/Stored | Rate 5 | 119 | ᅴ | | | | | | | | | | |
| R. F. P. R. 4 (be. | × 5.1.14 | Moha | Destrine Destrine | 4 400 | 2 | | | | | | | | | | |
| MOS L. DWSHEA Rainguished By/Removed From | Date/fine 1200 | Fed Ex | / | | | | | | | | | * | | | |
| Relinquished By/Removed From | Date/Time | Received By/Styred | In Detertime | 1 9140 | | | | | | | | | | | |
| Relinquished By/Removed From | Date/Time | Received By/Stored | | , ,,,,, | | | | * | | | | REVIEWE | | | |
| Relinquished By/Removed From | · Date/Time | Received By/Stored | in Date/Time | | | | | | | | | DATE | } | | |
| Refinquished By/Removed From | Date/Time | Received By/Stored | in Date/Time | | | JP | 078 | 5 | | | | ड्रीग्रे | | | |
| FINAL SAMPLE Disposal Method DISPOSITION | | Dispose | kd By Date/T | ime | | | | | | | | | | | |
| WCH-EE-011 | | | | | | | A.Z. | | | | | | | | |

427R402

| Washington | hington Closure Hanford CHAIN OF CUSTODY/SAMI | | | | | E ANA | LYS | IS REQ | JEST | RC-1 | 89-286 | Page | 2 of 2 | |
|---|---|-----------------------------------|--|-----------------------------------|-------------------|-----------------|--------------|--|---------------------------------------|------------------|----------------------|----------------------|-----------------|--|
| Collector C Stowe | | Gompa | Company Contact Telephone Joan Kessner 375-4688 | | | | | Project Coord KESSNER | nator L, JH | Price Code | | Data | Data Turnaround | |
| Project Designation 100N Field Remediation | | | Sampling Location 100-N-99 Verification | | | | SAF No. | | | 7 90 | **** · | | | |
| Ice Chest No. | | | ogbook No. | | COA | | | RC-189 Method of Ship | wnent | | | | | |
| WCH-11-00 | 9 | | 1652-11 | | 000N99 | 2000 | | Commerci | al Carrier | (Fed 87 | < | | | |
| Shipped To TestAmerica Denver | | | Property No. 4/3//35 | | | | | Bill of Lading/ | AIR BIE NO | | | | | |
| Other Labs Shipped To | | | Preservation | Cool 4C | Cool 4C | | | | | | | | | |
| | | | Type of Container | a/G | e G | | | | | | | | | |
| POSSIBLE SAMPLE HA | ZARDS/REMARKS | | No. of Container(s) | 1 | 1 | | | | | | | | | |
| None | | | Volume | 125mL | 250mL | | | | | | | | | |
| Special Handling and/or Cool 4C 'B B U | r Storage | | Sample Analysis | TPH-Dissal Range - WTPH-D + | PAHs - 8310 | | | | | | | | | |
| 10 Sample No. | Matrix | Sample Date | Sample Time | STEEL STORY | 指海瓜豆00 00% | HIND Y HOUSE | TIMPO TIGATE | MIN GENERAL SON | · · · · · · · · · · · · · · · · · · · | 新疆和北京区域 | 100000 | CONCOUR | 公内部 设计社会 | |
| J17260 | SOIL | 05/01/14 | 0832 | × | × | Sent Districtor | 相影從信息團 | 建筑出现的规则企 业 | 美工作用于经验 | 列亚科亚亚大山大地 | A CHARLEST OF STREET | TO SHEET WAS | 工业和2000年 | |
| J1761 | SOIL | 290011 | 0336 | X | X | | - | | _ | | | | <u> </u> | |
| J1 & 62 | SOIL | 2=12111 | 0838 | X | X | | | | | _ | | | | |
| J1TL63 | SOIL | 22/01/14 | 0839 | X | X | | | 7 | | | 1 | | | |
| J1TL64 | SOIL | 05/01/14 | 0820 | MIA | × | | | | | | | | | |
| CHAIN OF PO | OSSESSION | 1.5 21.51.11 | Sign/Print Names | | SPEC | IAL INSTRU | CTIONS | _ | l | | | | <u> </u> | |
| Relinquished By/Removed From Rothquished By/Removed From R Fa h Ilon R-Fal Relinquished By/Removed From MOS Lea DUSHE/ Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From | 1000 | R-faces Received By/Stores MUS he | Date/Time Date/Time Date/Time Date/Time Date/Time Date/Time | 5.1.14 5.1.14 1 9:40 | | | E | | | ¥ | | EVIEWEI BY M S | | |
| Relinquished By/Removed From | Date/Time | Received By/Stored | in Date/Time | | | JP0 | 785 | | | | | DATE | | |
| FINAL SAMPLE DISPOSITION | thad | Dispose | dBy ⊡ste√Te | TRO | | | | | <u></u> | | | ب | | |

Appendix 5

Data Validation Supporting Documentation

| VALIDATION LEVEL: | А | В | | , D | . Е | | |
|--|----------------------------|-----------|-------------|-----------|--|--|--|
| PROJECT: / (| 100-N-99 DATA PACKAGE: JPO | | | 785 | | | |
| VALIDATOR: | FLR | LAB: | 4 | DATE: 5/2 | 23/14 | | |
| | | | SDG: | P0785 | | | |
| ANALYSES PERFORMED | | | | | | | |
| 8015 | 8021 | 8141 | 8151 | 8315 | | | |
| | | WTPH-HCID | WTPH-G | WTPH-D | | | |
| | | | | | | | |
| SAMPLES/MAT | RIX: | | | | | | |
| TITLSS | lit | L5C] | 11TL37 | JITL | 58 | | |
| JITLSA | | 40 | IT L61 | | €2 | | |
| SITL63 | | | | | | | |
| J | | | | | | | |
| | | | | « | 5011 | | |
| Technical verificat | ion documentation | present? | | /E | Ye No N/A | | |
| Initial calibrations Continuing calibra Standards traceable Standards expired? Calculation check | acceptable?e? | | | | Yes No N/AYes No N/AYes No N/AYes No N/AYes No N/A | | |
| | | | | | | | |

| 3. BLANKS (Levels B, C, D, and E) | | K |
|---|--|---|
| Calibration blanks analyzed? (Levels D, E) | Yes | No NA |
| Calibration blank results acceptable? (Levels D, E) | Yes | No N/A |
| Laboratory blanks analyzed? | | No N/A |
| Laboratory blank results acceptable? | | No N/A |
| Field/trip blanks analyzed? (Levels C, D, E) | Ye | NO NA |
| Field/trip blank results acceptable? (Levels C, D, E) | Yes | No N/A |
| Transcription/calculation errors? (Levels D, E) | Yes | No NHA |
| Comments: | no FB | |
| | | Management of the state of the |
| | | |
| 4. ACCURACY (Levels C, D, and E) | | |
| Surrogates/system monitoring compounds analyzed? | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | No N/A |
| Surrogate/system monitoring compound recoveries acceptable? | (Yes | No NA |
| Surrogates traceable? (Levels D, E) | Yes | No WA |
| Surrogates expired? (Levels D, E) | } | No (N/A) |
| MS/MSD samples analyzed? | (Yes | No N/A |
| MS/MSD results acceptable? | (Y d s | No NA |
| MS/MSD standards NIST traceable? (Levels D, E) | Yes | No (N/A |
| MS/MSD standards expired? (Levels D, E) | | No WA |
| LCS/BSS samples analyzed? | (Yes) | No N/A |
| LCS/BSS results acceptable? | (Yes) | No NA |
| Standards traceable? (Levels D, E) | Yes | N(XFA) |
| Standards expired? (Levels D, E) | Yes | NO NA |
| Transcription/calculation errors? (Levels D, E) | Yes | No(N/A) |
| Performance audit sample(s) analyzed? | Ye | No)N/A |
| Performance audit sample results acceptable? | Yes | No (N/A) |
| Comments: | | *************************************** |
| | | |
| 1, | 10 PK | |
| V | 100 | |

| 5. | PRECISION (Levels C, D, and E) | |
|-------------|---|------------|
| Dupli | cate RPD values acceptable? | |
| Dupli | cate results acceptable? | |
| MS/M | ISD standards NIST traceable? (Levels D, E) | Yes No NA |
| MS/M | 1SD standards expired? (Levels D, E) | Yes No NA |
| Field | duplicate RPD values acceptable? | (Yes No NA |
| Field | split RPD values acceptable? | Yes No N/A |
| Trans | cription/calculation errors? (Levels D, E) | Yes No N/A |
| Comn | nents: | |
| | | |
| | • | |
| | | |
| | | |
| | | |
| | | |
| 6. | HOLDING TIMES (all levels) | |
| Samp | les properly preserved? | |
| Samp | le holding times acceptable? | Yes Xo N/A |
| Comr | nents: | |
| | | |
| | | |
| | | |
| | | , |
| | | |
| | | |

| 8. COMPOUND IDENTIFICATION, QUANTITATION, AND | DETECTION LIMITS (all |
|--|-----------------------|
| levels) | |
| Results reported for all requested analyses? | Yes No N/A |
| Results supported in the raw data? (Levels D, E) | Yes No W/A |
| Samples properly prepared? (Levels D, E) | Yes No NA |
| Detection limits meet RDL? | |
| Transcription/calculation errors? (Levels D, E) | Yes No NA |
| Comments: | |
| | |
| | |
| | |
| | |
| 9. SAMPLE CLEANUP (Levels D and E) | |
| Fluoricil ® (or other aborbant) cleanup performed? | Yes No N/A |
| Lot check performed? | Yes No N/A |
| Check recoveries aceptable? | |
| Check materials traceable? | |
| Check materials Expired? | |
| Analytical batch QC given similar cleanup? | i |
| Transcription/Calculation Errors? | Yes No N/A |
| Comments: | \ / |
| | |
| | |
| | |
| , | |
| | |

Appendix 6

Additional Documentation Requested by Client

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Method Blank - Batch: 280-224063

Method: NWTPH-Dx Preparation: 3550C

Lab Sample ID:

MB 280-224063/1-A

Analysis Batch:

280-224395

Instrument ID:

SGC_U

Client Matrix: Dilution:

Solid 1.0

Prep Batch: Leach Batch:

Units:

280-224063 N/A

Lab File ID:

05060005.D

Analysis Date:

05/06/2014 1145

ug/Kg

Initial Weight/Volume:

30.5 g

Prep Date:

05/02/2014 1917

Final Weight/Volume: Injection Volume:

1 mL

Leach Date:

N/A

1 uL

| Analyte | Result | Qual | MDL | RL | |
|-----------|--------|------|-------------------|------|--|
| C10-C36 | 980 | U | 980 | 3900 | |
| C10-C28 | 670 | U | 670 | 3900 | |
| | | | | | |
| Surroyate | % Rec | | Accentance Limits | | |

o-Terphenyl

74

49 - 115

Lab Control Sample - Batch: 280-224063

Method: NWTPH-Dx Preparation: 3550C

Lab Sample ID:

LCS 280-224063/2-A

Analysis Batch:

280-224395

Instrument ID:

SGC_U

Client Matrix:

Solid

Prep Batch:

280-224063

Lab File ID:

05060006.D

Dilution: Analysis Date: 1.0 05/06/2014 1214 Leach Batch: Units:

N/A ug/Kg Initial Weight/Volume: Final Weight/Volume:

32.2 g 1 mL

Prep Date: Leach Date: 05/02/2014 1917

Injection Volume:

1 uL

N/A

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|-------------|--------------|--------|--------|------------------|------|
| C10-C36 | 62200 | 53900 | 87 | 57 - 115 | |
| C10-C28 | 62200 | 53900 | 87 | 53 - 115 | |
| Surrogate | % | Rec | Α | cceptance Limits | |
| o-Terphenyl | 7 | 1 | | 49 - 115 | |

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-54971-1

Sdg Number: JP0785

Matrix Spike/ Method: NWTPH-Dx Matrix Spike Duplicate Recovery Report - Batch: 280-224063 Preparation: 3550C

MS Lab Sample ID: Client Matrix: Dilution:

Analysis Date:

Prep Date:

Dilution:

280-54971-5 Solid

1.0

05/06/2014 1504 05/02/2014 1917 N/A

280-54971-5

Leach Date:

MSD Lab Sample ID: Client Matrix:

Solid 1.0

Analysis Date: Prep Date:

05/06/2014 1533 05/02/2014 1917

Leach Date: N/A Analysis Batch:

Prep Batch: Leach Batch:

Analysis Batch:

Prep Batch:

Leach Batch:

Units: ug/Kg

280-224395 280-224063

280-224395

280-224063

N/A

N/A

Lab File ID:

Instrument ID:

Initial Weight/Volume: Final Weight/Volume:

Injection Volume: 1 uL

32.2 g 1 mL

SGC_U

05060012.D

05060013.D

SGC U

Instrument ID: Lab File ID:

Initial Weight/Volume: Final Weight/Volume:

30.0 g 1 mL 1 uL

Injection Volume:

% Rec. Analyte MS MSD Limit RPD RPD Limit MS Qual MSD Qual C10-C36 78 86 57 - 115 15 23 C10-C28 79 86 56 - 115 16 23 Surrogate MS % Rec MSD % Rec Acceptance Limits o-Terphenyl 72 67 49 - 115

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-224063

MS Lab Sample ID:

Client Matrix:

Dilution: Analysis Date:

Prep Date: Leach Date: 280-54971-5

Solid

1.0

05/06/2014 1504 05/02/2014 1917

N/A

Method: NWTPH-Dx Preparation: 3550C

MSD Lab Sample ID:

280-54971-5 Client Matrix: Solid 1.0

Dilution: Analysis Date:

05/06/2014 1533 Prep Date: 05/02/2014 1917

Leach Date:

N/A

| Analyte | Sample Result/Qua | ai | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---------|----------------------|----|--------------------|---------------------|-------------------|--------------------|
| C10-C36 | 1900 | J | 62800 | 67400 | 51100 | 59700 |
| C10-C28 | 1200 | J | 62800 | 67400 | 50700 | 59400 |